Review of

Ship-based estimates of momentum transfer coefficient over sea ice and recommendation for its parameterization

by Srivastava et al.

This paper describes measurements of the near-surface momentum fluxes obtained from two ship cruises to the Arctic in summers 2014 and 2016. Momentum transfer coefficients are derived and results are compared with existing parameterizations accounting for the form drag of floe edges. It is shown that the drag coefficients peak at sea ice concentration of 0.6-0.8, which was also postulated by the parameterizations. After some tuning, two parameterizations show an impressing agreement with the measurements. It requires enormous logistic efforts to gain measurements like those presented in the manuscript and so they are unique in the literature.

The paper is very well written and follows a clear logic. Results are very useful for modellers. So, I have only a small number of minor revisions and can suggest the publication of the text with only little modifications.

Minor Revisions

1. Equation 1: It is a simplification because the small term $+\psi_m(z_0/L)$ in brackets is neglected. Please tell also that $\zeta = z/L$ where L is the Obukhov length.

2. Equation 12: I suggest writing below the equation something that $U_{10n} = U_{10} f_m$ where f_m is the stability correction that can be derived from the Businger-Dyer stability correction.

3. Section 3.4: It is explained here and later that two sets of sea ice fractions were used. The size of the representative area for the sea ice fraction, especially from the onboard imagery, is not completely clear for me. Ideally, the parameterizations would require a region of perhaps 5-10 km diameter. But this value is rather vague and depends probably also on the situation. E.g. it might depend on the floe sizes and homogeneity. Could you include a few sentences about this? What is your opinion, based on the data and footprint, about the ideal size of the region?